PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT3797816

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
ULSAN NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY	03/23/2016

RECEIVING PARTY DATA

Name:	UNIST (ULSAN NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY)
Street Address:	50, UNIST-GIL
City:	ULSAN
State/Country:	KOREA, REPUBLIC OF
Postal Code:	44919

PROPERTY NUMBERS Total: 82

Property Type	Number
Application Number:	14845488
Application Number:	14144792
Application Number:	14700215
Application Number:	14555712
Application Number:	14555713
Application Number:	14399333
Application Number:	14411176
Application Number:	14476880
Application Number:	14494764
Patent Number:	9166578
Application Number:	14309945
Application Number:	14159521
Application Number:	14515526
Application Number:	14227028
Application Number:	14250790
Application Number:	14057306
Application Number:	14037590
Application Number:	14037615
Patent Number:	9203083
Patent Number:	9172081

PATENT REEL: 038238 FRAME: 0905

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Property Type	Number
Application Number:	13855798
Patent Number:	8574942
Patent Number:	9096705
Patent Number:	8808921
Patent Number:	9156682
Application Number:	13378729
Patent Number:	8669008
Application Number:	13358214
Application Number:	13358119
Application Number:	13006921
Application Number:	12655034
Application Number:	14626214
Application Number:	14758097
Application Number:	14759656
Application Number:	14605716
Application Number:	14394835
Application Number:	14495961
Application Number:	14335324
Application Number:	14322007
Application Number:	14353032
Application Number:	14369199
Application Number:	14233129
Patent Number:	8871480
Application Number:	13843964
Application Number:	13810023
Patent Number:	9017638
Patent Number:	6339334
Application Number:	13270198
Patent Number:	8575335
Application Number:	13904525
Application Number:	14765567
Patent Number:	8618858
Application Number:	14264804
Application Number:	14610040
Application Number:	14027053
Application Number:	13566553
Patent Number:	9196896
Patent Number:	9150020

Property Type	Number
Patent Number:	8625654
Application Number:	14781261
Application Number:	14744449
Application Number:	14248822
Application Number:	14248126
Patent Number:	9029252
Application Number:	14535952
Application Number:	14605738
Patent Number:	9083919
Application Number:	14780002
Application Number:	14894364
Application Number:	14967376
Application Number:	14843518
Application Number:	14684178
Application Number:	14547551
Application Number:	14849250
Application Number:	14895702
Application Number:	14923020
Application Number:	14972216
Application Number:	14904237
Application Number:	14975337
Application Number:	14873728
Application Number:	14908124
Application Number:	13566479

CORRESPONDENCE DATA

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Address Line 4: ALEXANDRIA, VIRGINIA 22314

NAME OF SUBMITTER:	YOON S. HAM
SIGNATURE:	/Yoon S. Ham/
DATE SIGNED:	03/23/2016

Total Attachments: 6



ASSIGNMENT

WHEREAS, ULSAN NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, a corporation of Republic of Korea, located and doing business at 50, UNIST-gil, Ulsan 44919, Republic of Korea (hereinafter Assignor) own U.S. Patent Nos. 9,166,578, issued 10/20/2015, 9,203,083, issued 12/01/2015, 9,172,081, issued 10/27/2015, 8,574,942, issued 11/05/2013, 9,096,705, issued 8/4/2015, **8,808,921**, issued 8/19/2014, **9,156,682**, issued 10/13/2015, **8,669,008**, issued 3/11/2014, **8,871,480**, issued 10/28/2014, 9,017,638, issued 4/28/2015, 6,339,334, issued 1/15/2002, 8,575,335, issued 11/5/2013, **8,618,858**, issued 12/31/2013, **9,196,896**, issued 11/24/2015, **9,150,020**, issued 10/6/2015, 8,625,654, issued 1/7/2014, 9,029,252, issued 5/12/2015, and 9,083,919, issued 7/14/2015, and U.S. Patent Application Nos. 14/845,488, filed 9/4/2015, 14/144,792, filed 12/31/2013, 14/700,215, filed 4/30/2015, **14/555,712**, filed 11/28/2014, **14/555,713**, filed 11/28/2014, **14/399,333**, filed 11/6/2014, 14/411,176, filed 12/24/2014, 14/476,880, filed 9/4/2014, 14/494,764, filed 9/24/2014, 14/309,945, filed 6/20/2014, 14/159,521, filed 1/21/2014, 14/515,526, filed 10/16/2014, 14/227,028, filed 3/27/2014, 14/250,790, filed 4/11/2014, 14/057,306, filed 10/18/2013, 14/037,590, filed 9/26/2013, 14/037,615, filed 9/26/2013, **13/855,798**, filed 4/3/2013 **13/378,729**, filed 12/16/2011, **13/358,214**, filed 1/25/2012, 13/358,119, filed 1/25/2012, 13/006,921, filed 1/14/2011, 12/655,034, filed 12/22/2009, 14/626,214, filed 2/19/2015, 14/758,097, filed 6/26/2015, 14/759,656, filed 7/8/2015, 14/605,716, filed 1/26/2015, 14/394,835, filed 10/16/2014, 14/495,961, filed 9/25/2014, 14/335,324, filed 7/18/2014, 14/322,007, filed 7/2/2014, 14/353,032, filed 4/21/2014, 14/369,199, filed 6/27/2014, 14/233,129, filed 3/5/2014, 13/843,964, filed 3/15/2013, 13/810,023, filed 3/20/2013, 13/270,198, filed 10/10/2011, 13/904,525, filed 5/29/2013, **14/765,567**, filed 8/3/2015, **14/264,804**, filed 4/29/2014, **14/610,040**, filed 1/30/2015, 14/027,053, filed 9/13/2013, 13/566,553, filed 8/3/2012, 14/781,261, filed 9/29/2015, 14/744,449, filed 6/19/2015, **14/248,822**, filed 4/9/2014, **14/248,126**, filed 4/8/2014, **14/535,952**, filed 11/7/2014, 14/605,738, filed 1/26/2015, 14/780,002, filed 09/25/2015, 14/894,364, filed 11/26/2015, 14/967,376, filed 12/14/2015, 14/843,518, filed 09/02/2015, 14/684,178, filed 04/09/2015, 14/547,551, filed 11/19/2014, 14/849,250, filed 09/09/2015, 14/895,702, filed 12/03/2015, 14/923,020, filed 10/26/2015, 14/972,216, filed 12/17/2015, 14/904,237, filed 08/16/2013, 14/975,337 filed on 12/18/2015, 14/873,728, filed on 10/02/2015, 14/908,124, filed on 01/28/2016, and 13/566,479, filed 08/03/2012, by virtue of an Assignment as shown in the appendix A attached herewith.

WHEREAS, <u>UNIST</u> (<u>ULSAN</u> <u>NATIONAL</u> <u>INSTITUTE</u> <u>OF</u> <u>SCIENCE</u> <u>AND</u> <u>TECHNOLOGY</u>, a corporation of Republic of Korea, located and doing business at <u>50</u>, <u>UNIST-gil</u>, <u>Ulsan 44919</u>, <u>Republic of Korea</u> (hereinafter Assignee) is desirous of acquiring the complete title and

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interest in said Letters Patents and Patent Applications.

NOW, THEREFORE, in consideration of the sum of one dollar (\$1.00) and other good and valuable consideration, the receipt of which is hereby acknowledged, Assignor by these presents do sell, assign and transfers unto said Assignee, its successors, legal representatives, heirs and assigns the entire right, title and interest in the United States to said invention as described in U.S. Patent Nos. 9,166,578, issued 10/20/2015, 9,203,083, issued 12/01/2015, 9,172,081, issued 10/27/2015, 8,574,942, issued 11/05/2013, 9,096,705, issued 8/4/2015, 8,808,921, issued 8/19/2014, 9,156,682, issued 10/13/2015, 8,669,008, issued 3/11/2014, 8,871,480, issued 10/28/2014, 9,017,638, issued 4/28/2015, 6,339,334, issued 1/15/2002, **8,575,335**, issued 11/5/2013, **8,618,858**, issued 12/31/2013, **9,196,896**, issued 11/24/2015, **9,150,020**, issued 10/6/2015, **8,625,654**, issued 1/7/2014, **9,029,252**, issued 5/12/2015, and 9,083,919, issued 7/14/2015, and <u>U.S. Patent Application</u> Nos. 14/845,488, filed 9/4/2015, 14/144,792, filed 12/31/2013, 14/700,215, filed 4/30/2015, 14/555,712, filed 11/28/2014, 14/555,713, filed 11/28/2014, 14/399,333, filed 11/6/2014, 14/411,176, filed 12/24/2014, 14/476,880, filed 9/4/2014, 14/494,764, filed 9/24/2014, 14/309,945, filed 6/20/2014, 14/159,521, filed 1/21/2014, 14/515,526, filed 10/16/2014, 14/227,028, filed 3/27/2014, 14/250,790, filed 4/11/2014, 14/057,306, filed 10/18/2013, 14/037,590, filed 9/26/2013, 14/037,615, filed 9/26/2013, 13/855,798, filed 4/3/2013 13/378,729, filed 12/16/2011, **13/358,214**, filed 1/25/2012, **13/358,119**, filed 1/25/2012, **13/006,921**, filed 1/14/2011, 12/655,034, filed 12/22/2009, 14/626,214, filed 2/19/2015, 14/758,097, filed 6/26/2015, 14/759,656, filed 7/8/2015, 14/605,716, filed 1/26/2015, 14/394,835, filed 10/16/2014, 14/495,961, filed 9/25/2014, 14/335,324, filed 7/18/2014, 14/322,007, filed 7/2/2014, 14/353,032, filed 4/21/2014, 14/369,199, filed 6/27/2014, 14/233,129, filed 3/5/2014, 13/843,964, filed 3/15/2013, 13/810,023, filed 3/20/2013, 13/270,198, filed 10/10/2011, 13/904,525, filed 5/29/2013, 14/765,567, filed 8/3/2015, 14/264,804, filed 4/29/2014, 14/610,040, filed 1/30/2015, 14/027,053, filed 9/13/2013, 13/566,553, filed 8/3/2012, 14/781,261, filed 9/29/2015, 14/744,449, filed 6/19/2015, 14/248,822, filed 4/9/2014, 14/248,126, filed 4/8/2014, 14/535,952, filed 11/7/2014, 14/605,738, filed 1/26/2015, 14/780,002, filed 09/25/2015, 14/894,364, filed 11/26/2015, 14/967,376, filed 12/14/2015, 14/843,518, filed 09/02/2015, 14/684,178, filed 04/09/2015, 14/547,551, filed 11/19/2014, 14/849,250, filed 09/09/2015, 14/895,702, filed 12/03/2015, **14/923,020**, filed 10/26/2015, **14/972,216**, filed 12/17/2015, **14/904,237**, filed 08/16/2013, 14/975,337 filed on 12/18/2015, 14/873,728, filed on 10/02/2015, 14/908,124, filed on 01/28/2016, and 13/566,479, filed 08/03/2012, and all re-issues, or extensions of said Letters Patents to be held and enjoyed by said Assignee for its own use, or for its legal representatives, successors, heirs, and assigns to the full end of the term for which said Letters Patents and Patent Applications are granted, and any

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extensions thereof, as fully and entirely as the same would have been held by said Assignor had this

assignment and sale not been made, and for the same consideration said Assignor hereby covenants and

agrees that at the time of execution and delivery of this instrument it is the lawful owner of the complete

right, title and interest in and to said invention and said Letters Patents and Patent Applications above

mentioned, and its interest is unencumbered and that it has good and full right and lawful authority to sell

and convey its interest in the manner set forth herein; and for the same consideration Assignor hereby

covenants and agrees that it will, whenever counsel for said Assignee, or counsel for their legal successors,

legal representatives, heirs or assigns shall advise that any proceedings in connection with said Letters

Patents and Patent Applications or any re-issue or extension of said Letters Patents and Patent

Applications to be obtained thereon, is lawful and desirable, sign all papers and documents, make all

lawful oaths, and do all acts necessary as required to be done for the procurement, maintenance,

enforcement and defense of said Letters Patents, without charge to said Assignor, its successors, legal

representatives, heirs and assigns, but at the expense of said Assignee, their successors, legal

representatives, heirs and assigns.

Assignor hereby further assigns to Assignee all claims and causes of action for infringement of

the patent rights assigned herein, including the right to sue for, and collect damages for, any and all acts

of past and future infringement.

Assignor hereby grants Hauptman Ham, LLP, located at 2318 Mill Road, Suite 1400, Alexandria,

VA 22314 (Customer No. 22429), the power to insert on this assignment any further identification which

may be necessary or desirable in order to comply with the rules of the United States Patent and

Trademark Office for recordation of this document.

Assignor:

ULSAN NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY

Date: March 23, 2016

Name:

MOO YOUNG

President of ULSAN NATIONAL

INSTITUTE OF SCIENCE AND TECHNOLOGY

Enclosed: Appendix A

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Appendix A

	U.S. Patent No.	Application No.	Issue Date	Filing Date	Reel No.	Frame No.	Recorded
1		14/845,488		9/4/2015	037758	0979	02/18/2016
2		14/144,792		12/31/2013	037759	0001	02/18/2016
3		14/700,215		4/30/2015	037759	0007	02/18/2016
4		14/555,712		11/28/2014	037759	0029	02/18/2016
5		14/555,713		11/28/2014	037759	0023	02/18/2016
6		14/399,333		11/6/2014	037759	0035	02/18/2016
7		14/411,176		12/24/2014	037759	0041	02/18/2016
8		14/476,880		9/4/2014	037759	0047	02/18/2016
9		14/494,764		9/24/2014	037759	0059	02/18/2016
10	9,166,578	14/300,348	10/20/2015	6/10/2014	037759	0065	02/18/2016
11		14/309,945		6/20/2014	037759	0073	02/18/2016
12		14/159,521		1/21/2014	037759	0079	02/18/2016
13		14/515,526		10/16/2014	037759	0091	02/18/2016
14		14/227,028		3/27/2014	037759	0097	02/18/2016
15		14/250,790		4/11/2014	037759	0103	02/18/2016
16		14/057,306		10/18/2013	037759	0109	02/18/2016
17		14/037,590		9/26/2013	037759	0115	02/18/2016
18		14/037,615		9/26/2013	037759	0131	02/18/2016
19	9,203,083	13/940,358	12/1/2015	7/12/2013	037759	0137	02/18/2016
20	9,172,081	13/798,567	10/27/2015	3/13/2013	037759	0143	02/18/2016
21		13/855,798		4/3/2013	037759	0168	02/18/2016
22	8,574,942	13/650,754	11/5/2013	10/12/2012	037759	0149	02/18/2016
23	9,096,705	13/624,311	8/4/2015	9/21/2012	037759	0162	02/18/2016
24	8,808,921	13/576,703	8/19/2014	8/2/2012	037759	0174	02/18/2016
25	9,156,682	13/480,506	10/13/2015	5/25/2012	037759	0180	02/18/2016
26		13/378,729		12/16/2011	037759	0186	02/18/2016
27	8,669,008	13/239,912	3/11/2014	9/22/2011	037759	0192	02/18/2016

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28 13/358,214 1/25/2012 037759 0198 02/18/2016 29 13/358,119 1/25/2012 037759 0204 02/18/2016 30 13/006,921 1/14/2011 037759 0210 02/18/2016 31 12/655,034 12/22/2009 037759 0223 02/18/2016 32 14/626,214 2/19/2015 037759 0233 02/18/2016 34 14/758,097 6/26/2015 037759 0247 02/18/2016 35 14/605,716 1/26/2015 037759 0307 02/18/2016 36 14/394,835 10/16/2014 037759 0319 02/18/2016 37 14/495,961 9/25/2014 037759 0331 02/18/2016 38 14/332,302 4/21/2014 037759 0331 02/18/2016 39 14/322,007 7/2/2014 037759 0331 02/18/2016 40 14/353,032 4/21/2014 037759 0331 02/18/2016 41 <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>								
30	28		13/358,214		1/25/2012	037759	0198	02/18/2016
31 12/655,034 12/22/2009 037759 0223 02/18/2016 32 14/626,214 2/19/2015 037759 0233 02/18/2016 33 14/758,097 6/26/2015 037759 0247 02/18/2016 34 14/759,656 7/8/2015 037759 0253 02/18/2016 35 14/605,716 1/26/2015 037759 0307 02/18/2016 36 14/394,835 10/16/2014 037759 0319 02/18/2016 37 14/495,961 9/25/2014 037759 0331 02/18/2016 38 14/335,324 7/18/2014 037759 0337 02/18/2016 39 14/322,007 7/2/2014 037759 0337 02/18/2016 40 14/353,032 4/21/2014 037759 0331 02/18/2016 41 14/369,199 6/27/2014 037771 0329 02/18/2016 42 14/233,129 3/5/2014 037771 0315 02/18/2016 43	29		13/358,119		1/25/2012	037759	0204	02/18/2016
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